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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/826,432

04/16/2004

David Allen Kastrop

140728

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29399 7590 05/21/2008

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EXAMINER

NGUYEN, ANDREW H

ART UNIT

PAPER NUMBER

3746

NOTIFICATION DATE

DELIVERY MODE

05/21/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USpatents@armstrongteasdale.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/826,432	<b>Applicant(s)</b> KASTRUP ET AL.	
	<b>Examiner</b> ANDREW NGUYEN	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group II in the reply filed on 2/21/08 is acknowledged. The traversal is on the ground(s) that Groups I and II are clearly related and a search of either Group would be relevant to the other Group. This is not found persuasive because the Groups reside in different classes/subclasses. A complete search for Group I would not necessarily include a search in Group II's class/subclass, and vice versa. This presents a significant burden. Also, the examination burden is not limited exclusively to a prior art search but also includes the effort required to apply the art by making and discussing all appropriate grounds of rejection. Multiple inventions, such as those in the present application, normally require additional reference material and further discussion for each additional invention examined. Concurrent examination of multiple inventions would thus typically involve a significant burden even if all searches were coextensive.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed,

had possession of the claimed invention. Amended claims 7 and 14 contain the limitations, "to substantially prevent fluid flow ... at said upstream and downstream portions". This was not found in the original specification. The closest mention was "preventing ingestion of fuel, water and/or air between venturi 36 and swirlers ...". However, "preventing ingestion" does not necessarily mean "preventing fluid flow" because preventing ingestion does not include preventing an outlet of flow.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

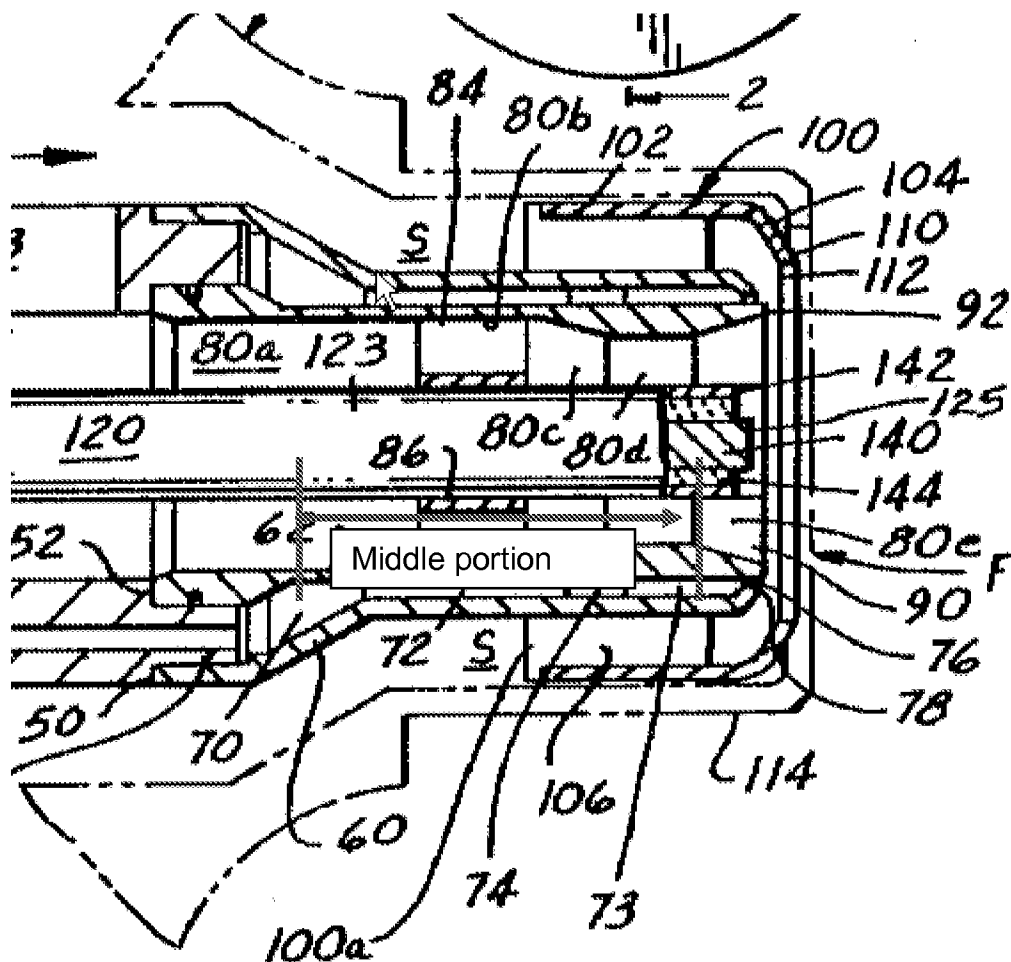
5. Claims 7-8, 13-15, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 4,938,019 to Angell et al (Angell).

In reference to claim 7:

*A combustor for a gas turbine engine, said combustor comprising:*

*a venturi (62 – defined by Angell as “sleeve extension”, but the venturi is included in the sleeve extension structure, i.e. the sleeve extension defines the venturi chambers, and thus, is considered a part of the venturi) comprising an upstream portion, a downstream portion and a middle portion (see definition of portions in Fig below) extending therebetween; and*

*a secondary swirler extending circumferentially around said venturi (100, 106, 60 – all parts of the secondary swirler), said secondary swirler coupled to said venturi (swirler 60 coupled to venturi 62 by wall 54) to substantially prevent fluid flow between a radially inner surface of said secondary swirler and a radially outer surface of said venturi at said upstream and downstream portions (“to substantially prevent ...” does not provide a clear limitation; how much is a "substantial" amount?), a gap is defined between said radially inner surface of said secondary swirler and said radially outer surface of said venturi middle portion (gaps 73, 72)*



In reference to claim 8:

Angell teaches:

*A combustor in accordance with Claim 7 (see rejection of claim 7 above) further comprising a primary swirler (86,84) coupled to said venturi such that said venturi is between said primary and secondary swirlers (venturi wall 62).*

In reference to claim 13:

Angell teaches:

*A combustor in accordance with Claim 7 (see rejection of claim 7 above) wherein said gap facilitates reducing an operating temperature of said venturi (73;*

insulates venturi from convective heat transfer of airflow through secondary swirler)

In reference to claim 14:

Angell teaches:

*A gas turbine engine comprising a combustor (col 1 lines 8-10) comprising an annular air swirler (100, 106, 60 – all parts of the secondary swirler) and an annular venturi (62 – defined by Angell as “sleeve extension”, but the venturi is included in the sleeve extension structure, i.e. the sleeve extension defines the venturi chambers, and thus, is considered a part of the venturi), said annular venturi comprising an upstream portion, a downstream portion and a middle portion extending therebetween (see Fig above for portion definitions), said annular air swirler coupled to said venturi (swirler 60 coupled to venturi 62 by wall 54) to substantially prevent fluid flow between a radially inner surface of said annular air swirler and a radially outer surface of said annular venturi at said upstream and downstream portions (“to substantially prevent ...” does not provide a clear limitation; how much is a "substantial" amount?), a gap is defined between said radially inner surface of said air swirler and said radially outer surface of said venturi middle portion (gaps 73, 72).*

In reference to claim 15:

Angell teaches:

*A gas turbine engine in accordance with Claim 14 (see rejection of claim 14 above) wherein said gap facilitates reducing an operating temperature of said*

*venturi (73; insulates venturi from convective heat transfer of airflow through secondary swirler).*

In reference to claim 18:

Angell teaches:

*A gas turbine engine in accordance with Claim 14 (see rejection of claim 14 above) wherein said gap facilitates maintaining an operating temperature of said venturi below a predetermined temperature (73; insulates venturi from convective heat transfer of airflow through secondary swirler; venturi will inherently fall below a certain temperature).*

In reference to claim 19:

Angell teaches:

*A gas turbine engine in accordance with Claim 14 (see rejection of claim 14 above) wherein said gap facilitates reducing coking of said venture (73; insulates venturi from convective heat transfer of airflow through secondary swirler; reduced venturi temperature will inherently reduce coking).*

In reference to claim 20:

Angell teaches:

*A gas turbine engine in accordance with Claim 14 (see rejection of claim 14 above) wherein said combustor further comprises a primary swirler (86, 84), said venturi (62) coupled between said primary swirler and said annular air swirler (100, 106, 60).*



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6. Claims 7, 11, 14, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 6,389,815 to Hura et al. (Hura).

In reference to claim 7:

Hura teaches:

*A combustor for a gas turbine engine, said combustor comprising:*  
*a venturi (154) comprising an upstream portion, a downstream portion and a middle portion extending therebetween (between numerals 152 and 150 = middle portion); and*  
*a secondary swirler extending circumferentially around said venturi (194, 190), said secondary swirler coupled to said venturi (swirler 194, 190 coupled to venturi 154 near numeral 186) to substantially prevent fluid flow between a radially inner surface of said secondary swirler and a radially outer surface of said venturi at said upstream and downstream portions ("to substantially prevent ..." does not provide a clear limitation; how much is a "substantial" amount?), a gap is defined between said radially inner surface of said secondary swirler and said radially outer surface of said venturi middle portion (gap 126)*

In reference to claim 11:

Hura teaches:

*A combustor in accordance with Claim 7 (see rejection of claim 7 above) wherein said secondary swirler (194) comprises a secondary air passage (124) extending therethrough and a plurality of openings (174), said openings couple said secondary air passage and said gap in flow communication*

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In reference to claim 14:

Hura teaches:

*A gas turbine engine comprising a combustor (abstract) comprising an annular air swirler (194, 190) and an annular venturi (154), said annular venturi comprising an upstream portion, a downstream portion and a middle portion extending therebetween (between numerals 152 and 150 = middle portion), said annular air swirler coupled to said venturi (swirler 194, 190 coupled to venturi 154 near numeral 186) to substantially prevent fluid flow between a radially inner surface of said annular air swirler and a radially outer surface of said annular venturi at said upstream and downstream portions ("to substantially prevent ..." does not provide a clear limitation; how much is a "substantial" amount?), a gap is defined between said radially inner surface of said air swirler and said radially outer surface of said venturi middle portion (gap 126).*

In reference to claim 17:

Hura teaches:

A gas turbine engine in accordance with Claim 14 (see rejection of claim 14 above) wherein said air swirler (194) defines a flow passageway extending therethrough (124), said air swirler comprises a plurality of openings (174) extending in flow communication between said flow passageway and said gap

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 7, 11, 14, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6,871,501 to Bibler et al. (Bibler). The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

In reference to claim 7:

Bibler teaches:

*A combustor for a gas turbine engine, said combustor comprising:*  
*a venturi (107) comprising an upstream portion, a downstream portion and a middle portion extending therebetween (between numerals 102 and 104 = middle portion); and*  
*a secondary swirler extending circumferentially around said venturi (140, 100), said secondary swirler coupled to said venturi (swirler 140, 100 coupled to venturi 107 downstream near flange 106) to substantially prevent fluid flow between a radially inner surface of said secondary swirler and a radially outer surface of said venturi at said upstream and downstream portions ("to*

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substantially prevent ..." does not provide a clear limitation; how much is a "substantial" amount?), *a gap is defined between said radially inner surface of said secondary swirler and said radially outer surface of said venturi middle portion (gap between numerals 100 and 104)*

In reference to claim 11:

Bibler teaches:

*A combustor in accordance with Claim 7 (see rejection of claim 7 above) wherein said secondary swirler (140) comprises a secondary air passage (44) extending therethrough and a plurality of openings (98), said openings couple said secondary air passage and said gap in flow communication*

In reference to claim 14:

Bibler teaches:

*A gas turbine engine comprising a combustor (abstract) comprising an annular air swirler (140, 100) and an annular venturi (107), said annular venturi comprising an upstream portion, a downstream portion and a middle portion extending therebetween (between numerals 102 and 104 = middle portion), said annular air swirler coupled to said venturi (swirler 140, 100 coupled to venturi 107 downstream near flange 106) to substantially prevent fluid flow between a radially inner surface of said annular air swirler and a radially outer surface of said annular venturi at said upstream and downstream portions ("to substantially prevent ..." does not provide a clear limitation; how much is a "substantial" amount?), *a gap is defined between said radially inner surface of said air swirler**

*and said radially outer surface of said venturi middle portion (gap between numerals 100 and 104).*

In reference to claim 17:

Bibler teaches:

*A gas turbine engine in accordance with Claim 14 (see rejection of claim 14 above) wherein said air swirler (140) defines a flow passageway extending therethrough (44), said air swirler comprises a plurality of openings (98) extending in flow communication between said flow passageway and said gap*

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 9-10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4,938,019 to Angell et al. (Angell) in view of US Patent 4,584,834 to Koshoffer et al. (Koshoffer).

In reference to claim 9:

Angell teaches:

*A combustor in accordance with Claim 8 (see rejection of claim 8 above)*

Angell fails to teach:

*wherein at least a portion of said venturi is slidably coupled to a portion of one of said primary and said secondary swirlers.*

Koshoffer teaches a gas turbine engine combustor comprising primary and secondary swirlers that are slidably coupled (col 4 lines 52-60) in order to accommodate differential thermal expansions and contractions. It would have been obvious to one of ordinary skill in the art at the time of the invention to slidably couple the components of Angell in order to accommodate differential thermal expansions and contractions, as explicitly taught by Koshoffer.

In reference to claim 10:

Angell teaches:

*A combustor in accordance with Claim 8 (see rejection of claim 8 above)*

Angell fails to teach:

*wherein at least a portion of said venturi is coupled to a portion of one of said primary and said secondary swirlers in a slide fit, said slide fit facilitates accommodating thermal growth of at least one of said primary and said secondary swirler with respect to said venturi.*

Koshoffer teaches a gas turbine engine combustor comprising primary and secondary swirlers that are slidably coupled (col 4 lines 52-60) in order to accommodate differential thermal expansions and contractions. It would have been obvious to one of ordinary skill in the art at the time of the invention to slidably couple the components of Angell in order to accommodate differential thermal expansions and contractions, as explicitly taught by Koshoffer.

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In reference to claim 16:

Angell teaches:

*A gas turbine engine in accordance with Claim 14 (see rejection of claim 14 above)*

Angell fails to teach:

*wherein at least a portion of said at least one annular air swirler is coupled in a slide fit against said venturi.*

Koshoffer teaches a gas turbine engine combustor comprising primary and secondary swirlers that are slidably coupled (col 4 lines 52-60) in order to accommodate differential thermal expansions and contractions. It would have been obvious to one of ordinary skill in the art at the time of the invention to slidably couple the components of Angell in order to accommodate differential thermal expansions and contractions, as explicitly taught by Koshoffer.

11. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4,938,019 to Angell et al. (Angell) in view of US Patent 5,220,786 to Campbell (Campbell).

Angell teaches:

*A combustor in accordance with Claim 7 (see rejection of claim 7 above)*

Angell fails to teach

*wherein said venturi radially outer surface comprises a layer of thermal barrier coating.*

Campbell teaches a thermally protected venturi for a combustor dome. Campbell teaches applying thermal barrier coating to a radially outer surface of the venturi (28) in order to thermally protect or insulate the venturi from hot air flowing along the outer surface (col 3 lines 8-12). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply thermal barrier coating to the outer surface of the venturi of Angell in order to thermally protect it from hot air, as explicitly taught by Campbell.

### ***Response to Arguments***

12. Applicant's arguments filed 2/21/08 have been fully considered but they are not persuasive.

With regards to applicant's arguments for claims 7 and 14, that "Angell does not describe nor suggest a swirler coupled to the venturi to substantially prevent fluid flow ... wherein a gap is defined between the ... swirler and the ... venturi at a middle portion of the venturi", it is noted that Angell does teach a swirler coupled to the venturi (see rejections of claims 7 and 14 above). The phrase, "to substantially prevent fluid flow ..." is very general in nature and does not specifically present a limitation. It is not known what constitutes a "substantial" amount. It is further noted that Angell does teach a gap between the swirler and venturi that occurs at a middle portion of the venturi (see Fig from rejection of claim 7 above).

With regards to applicant's assertion that "Angell describes a swirler that is coupled to a primary nozzle body, such that an annular fuel flow path extends between the radially inner surface of the swirler and the radially outer surface of the venturi along



the full length of the venturi", it is noted that applicant's interpretation is correct.

However, Examiner asserts that Angell still anticipates the claim. The "annular fuel flow path" constitutes a gap between the swirler and the venturi. The gap also occurs along the full length of the venturi, which includes a middle portion. Finally, the venturi and swirler are coupled together via a body 54.

With regards to applicant's assertion that "Hura does not describe nor suggest a swirler coupled to the venturi to substantially prevent fluid flow between a radially inner surface of the swirler and a radially outer surface of the venturi at upstream and downstream portions of the venturi, wherein a gap is defined between the radially inner surface of the swirler and the radially outer surface of the venturi at a middle portion of the venturi", Examiner asserts that Hura's venturi is coupled to the swirler (section 186 of venturi is coupled to section 182 of the swirler; Fig 4). Furthermore, a gap is defined between the venturi and the swirler (126) at least over a middle portion of the venturi.

With regards to applicant's assertion that "Bibler does not describe nor suggest a swirler coupled to the venturi to substantially prevent fluid flow between a radially inner surface of the swirler and a radially outer surface of the venturi at upstream and downstream portions of the venturi, wherein a gap is defined between the radially inner surface of the swirler and the radially outer surface of the venturi at a middle portion of the venturi", Examiner asserts that Bibler's swirler is coupled to the venturi (coupled near flange 106, Fig 3). A gap is defined between the swirler and the venturi between wall 100 and wall 104 (Fig 3) at least over a middle portion of the venturi.

With regards to applicant's assertion that neither Angell nor Koshoffer teaches claim 7 or claim 14, Examiner asserts that Angell does teach claims 7 and 14, as presented above. Applicant further asserts that "the teachings of Angell and Koshoffer do not fit together like pieces of a puzzle" but fails to point out what pieces of Koshoffer fail to fit in Angell and why. The combination of Angell and Koshoffer is still deemed proper.

With regards to applicant's assertion that neither Angell nor Campbell teaches claim 7 or claim 14, Examiner asserts that Angell does teach claims 7 and 14, as presented above. Applicant further asserts that "the teachings of Angell and Campbell do not fit together like pieces of a puzzle" but fails to point out what pieces of Campbell fail to fit in Angell and why. The combination of Angell and Campbell is still deemed proper.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW NGUYEN whose telephone number is (571)270-5063. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
Unit 3746

/AN/